**DATA EVALUATION RECORD**
**VEGETATIVE VIGOR $EC_{25}$ TEST**
**§123-1(B) (TIER II)**

1. **CHEMICAL:** Diflufenzopyr — PC Code No.: 005108

2. **TEST MATERIAL:** Distinct® Herbicide — Purity: 20.4%

3. **CITATION:**

Author: Howell, C.

Title: Distinct® Herbicide Tier II Vegetative Vigor Non-Target Phytotoxicity Study

Study Completion Date: January 24, 2000

Laboratory: ABC Laboratories, Inc.
Analytical Chemistry and Field Studies
7200 E. ABC Lane
Columbia, Missouri 65202-8015

Sponsor: BASF Corporation
Agricultural Products Center
26 Davis Drive
Research Triangle Park, North Carolina 27709-3528

Laboratory Report ID: 45816 (ABC Labs); 63752 (BASF)

MRID No.: 45047301

DP Barcode: D267665 & D267666

4. **REVIEWED BY:** Teri Myers, Ph.D., Staff Scientist, Dynamac Corporation

**Signature:** Teri S Myers **Date:** 6/21/01

**APPROVED BY:** Kathleen Ferguson, Ph.D., Senior Staff Scientist, Dynamac Corporation

**Signature:** Kathleen Ferguson **Date:** 6/21/01

5. **APPROVED BY:** Michele Mahoney

**Signature:** MK Mahoney **Date:** 4/3/02

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## 6. STUDY PARAMETERS:

**Scientific Name of Test Organism:** Dicots: *Cucumis sativus, Raphanus sativus, Glycine max, Beta vulgaris altissima, Helianthus annus,* and *Lycopersicon esculentum*

Monocots: *Zea mays, Lolium perenne, Triticum aestivum,* and *Allium cepa*

**Age or Size of Test Organism:** Seedling

**Definitive Study Duration:** 21 days

**Type of Concentration:** Nominal

## 7. CONCLUSIONS:

Six dicotyledon and four monocotyledon plant species were exposed to Distinct herbicide (containing 20.4% a.i. Diflufenzopyr) at nominal concentrations of 0.063, 0.13, 0.25, 0.50, 1.0, 2.0, 4.0, and 8.0 oz. Distinct/A for 21 days.

Phytotoxic symptoms were observed for all species, except corn, onion, ryegrass and wheat, and injuries included stunting, leaf rolling, epinasty, and necrosis. In general, increasing concentrations of Distinct increased the severity of phytotoxic symptoms. Radish, soybean, and tomato had the lowest NOEC values (0.063 oz. Distinct/A). Of these, tomato was the most sensitive species for this endpoint ($EC_{25}$=0.21 oz. Distinct/A). Plants for all species except corn, onion, and ryegrass showed at least 25% more injury than control plants.

Shoot length was significantly reduced by Distinct for all species, except onion and wheat. In general, dose-dependent responses were observed for all significantly-affected species. All dicots exposed to treatment showed at least a 25% reduction in shoot length, compared to the control. Of these species, cucumber and tomato were the most sensitive species for this endpoint with an $EC_{25}$ value of 0.36 oz. Distinct/A and NOEC values of 0.25 and 0.50 oz. Distinct/A, respectively.

Shoot weight was significantly reduced by Distinct for all species, except corn, onion, and wheat. Dose-dependent responses were observed for all significantly-affected species. All species exposed to treatment showed at least a 25% reduction in shoot weight, compared to the control, except corn, onion, and wheat. Tomato was the most sensitive

species for this parameter, with an $EC_{25}$ value of 0.19 oz. Distinct/A and a NOEC of <0.063 oz. Distinct/A.

No common endpoint was identified to be the most sensitive indicator of toxic effects for all test species. The most sensitive dicot was determined to be tomato (based on shoot weight). The most sensitive monocot was determined to be ryegrass because shoot weight was significantly reduced by 25% from control at 6.2 oz. Distinct/A. The NOEC value was 4.0 oz. Distinct/A.

**This study is classified as Core.**

Most sensitive dicot:

**tomato**
Most sensitive parameter: shoot weight
$EC_{25}$: 0.19 oz. Distinct/A
NOEC: <0.063 oz. Distinct/A

Most sensitive monocot:

**ryegrass**
Most sensitive parameter: shoot weight
$EC_{25}$: 6.2 oz. Distinct/A
NOEC: 4.0 oz Distinct/A

## 8. ADEQUACY OF THE STUDY:

**A. Classification:** Core

**B. Rationale:** Fulfills the guideline requirement

**C. Repairability:** not applicable

## 9. GUIDELINE DEVIATIONS:

## 10. SUBMISSION PURPOSE: R(NC)

## 11. MATERIALS AND METHODS:

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| **Species:**<br>6 dicots in 4 families, including soybean and a rootcrop; 4 monocots in 2 families, including corn. | Dicots: cucumber, radish, soybean, sugarbeet, sunflower, and tomato<br>Monocots: corn, ryegrass, wheat, and onion |
| **Number of plants per repetition:** | Five seedlings per replicate for all species except radish and sugarbeet, which had six. |
| **Source of seed:** | Novartis, Chesmore, Henry's Fields, KSU Foundation, Beta, SD Foundation |
| **Historical % germination of seed:** | Historical germination percentage ranged from 90% (cucumber, radish, and soybean) to 98% (ryegrass and sunflower); see Table 1 (p. 29). |

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| **Solvent:** | Water from a Labconco water system (multi-stage purification). |
| **Site of test:** | Two greenhouses located at ABC Laboratories, Inc. (Columbia, MO). Light was controlled, but temperature and humidity were not; climatological data presented in Appendix A, pp. 53 and 54. |